The Builder.

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EASTBOURNE, in Sussex, has long been creeping into favour as a watering-place, and is just now so full, that good housing is at a premium. Those who go there for bustle and tea-garden life, would probably arrive at a similar conclusion as Charles Lamb, who writes in his "Margate Hoy," "We have been dull at Worthing one summer, duller at Brighton another, dullest at Eastbourne a third." But those who seek quiet, pure air, a beautiful mixture of "the country" and the sea, charming rides in consequence, and places of archæological interest round about, to give inducement for excursions, come home well satisfied with Eastbourne. Under this general term are included three separate districts; that is, a new collection of buildings close to the sea, called the Sea Houses; a straggling village, with a new church and villa residences, called Southbourne; and then further inland, say a mile and a half from the sea, Eastbourne proper, girt with fine trees. The old church there is of Norman foundation, and with its massive and time-stained tower, zigzag ornaments, and perpendicular sedilia, interests and satisfies. Unfortunately the same cannot be said for the new church at Southbourne, in which compo and bad taste coalesced to produce an abomination, and have succeeded wonderfully. It professes to be in the Gothic style, and is certainly *gothic* enough. If it were not for the interior, the ugliness of the exterior would have no parallel. The want of good architectural advice is very observable, too, in the houses which have been recently built. The attic story of the lofty range of new dwellings facing the sea, and the one-pair window-caps in Cornfield-terrace, are caricatures which exemplify the want. There are two interesting old stone houses in the high road close by, with external staircases and mullioned windows. Although rude and of unpretending character, condemned, too, now, to commonest uses, these are much more pleasant to look at than the flaunting "Gothic villa" just finished, with bristling pinnacles, near the sea. The break in the line at Polegate station, which necessitates a change of carriages there, is against Eastbourne; but we shall be much surprised, nevertheless, if it does not become a place of even greater resort, and we would suggest to the authorities and the landowners the desirability of a thought for the future in their present arrangements. Taste does not involve any waste of money, but the contrary.

Hastings, Brighton, and Lewes are all within reach for day trips: the latter, as most of our readers doubtless know, contains much to interest the architectural antiquary.

Pevensey Bay, which Eastbourne borders, is formed towards the west by Beachy Head, the loftiest cliff on the south-western coast, and which juts out far into the Channel. Those who find pleasure in a glorious view and Nature's varied features, may seek it here. The cliff towers up and up, far higher than St. Paul's. Before you, and on either hand, is the abounding sea. On the left, when we saw it, its colour was the greenest of conceivable greens, with dashes of purple and a sprinkle of white-crested waves; while on the right spread out an expanse of molten silver, tumultuously throbbing,—a more magnificent sight eyes of man never rested on. Looking towards Hastings you have Southbourne—the bay beautifully curving,—and the last of the martello towers; towards the west, the elevation known as Belle Toute, with its well-placed lighthouse, and on the land side, a noble sweep of downs with furze and foliage and the purple heather. Worldly cares seem less in sight of the great sea. Nor are the emotions transitory to which a view of it gives rise: in after times,—

> "In vacant or in pensive mood,
> They flash upon that inward eye,
> Which is the bliss of solitude."

The old coast-guard men tell strange stories of feats of daring in the ascent and descent of the cliff, done here by smugglers in years gone by. Now, fortunately, the inducements to risk life are fewer and the doings prosaic,—save when some too adventurous tourist tries to emulate them, as was the case not very long since, and is dashed to pieces on the beach below.

The martello towers just now referred to give a peculiar character to this district: they were commenced, it may be remembered, at the beginning of the present century (about 1804) as part of a design for defending the coast against the meditated invasion of Napoleon Bonaparte. The towers consist of two stories, the lower for stores, the upper shell-proof for troops; and when not immediately close to the shore, have around them a deep moat faced with brick, and are entered by a moveable bridge: they are circular, and have a parapet around the vaulted top, to protect the artillerymen in working a long swivel-gun with which they were to have been mounted, but, with a very few exceptions, never were. There are seventy-four of them, we believe; the first a little to the east of Folkstone, the last near Beachy Head. Oddly enough, Corsica, whence came the cause of the fear, furnished the model and the name for the defence. It is understood that they had their origin from a fort in Mortella (or Myrtle) Bay, Corsica, which was captured by the British in 1794.

Pevensey Castle, but a very short ride from Eastbourne, is one of the most extensive examples of a Roman fortified town remaining in this country. Its identity with the Roman British town *Anderida*, appears now to be generally admitted. And there can be no doubt that the outer walls, lofty and thick, with huge solid round-ended bastions, or bulwarks, the whole faced with squared stones and having continuous layers of Roman tiles at intervals, are of the Roman period.* Some writers have thought otherwise, and attributed the earliest parts to the Norman period; but this must have been done without due examination. It is known that there was a castle here before William the Conqueror arrived, and that he garrisoned it. The *Notitia*, a list of the civil and military appointments of the Roman empire, compiled, it is supposed, in the reign of Theodosius the Younger (A.D. 450), or earlier perhaps, mentions, as amongst those under the government of the count of the Saxon shore,† the commander of a detachment of the Abulci, at Pevensey."‡ Moreover, a comparison with the remains at Richborough, Lymne, and elsewhere, sets the question at rest. Within the area enclosed by the outer walls, a large one, a mediæval castle was erected, with its gateway, bastions, moat, keep, chapel, and well, commenced probably by the conqueror's half-brother, Robert, Earl of Mortain. Some careful investigations were made here by Mr. Mark Anthony Lower and Mr. C. R. Smith in 1852, some particulars of which were published by the first-named gentleman.§ A sketch of the plan will serve to explain the arrangement better than words would: the dark lines show the Roman walls, the lighter the mediæval. A marks the Decuman-gate, with its massive flanking towers; B, a postern; and C, a gate fronting the main street of Pevensey; D shows the main entrance to the mediæval castle; and E, the site of the keep. 1, is the font marking the site of the "free chapel within the Castle of Pevensey," mentioned in a grant of this fortress by Edward III. and cleverly hit upon by Mr. Lower; 2 is the well; and 3, one of the Roman bastions, connected with a sally port in the mediæval work. At 4 there is a mass of the Roman walling, which has rolled down the declivity.

For many years these walls supplied the neighbourhood with stone, but it may be hoped that no further destruction will be permitted. It is a beautiful ruin, full of valuable teaching.

> "The wild pear whispers, and the ivy crawls,
> Along the circuit of thine ancient walls,
> Lone city of the dead! and near this mound,
> The buried coins of mighty men are found,
> Silent remains of Cæsars and of kings,
> Soldiers of whose renown the world yet rings,
> In its sad story! These have had their day
> Of glory, and have passed, like sounds, away!"

These stones are suggestive: they afford an insight into Roman character, and give us a more personal interest in the early history of our country.

We have but incomplete accounts of the condition and progress of Britain during the 400 years of Roman domination; but we find enough in the monuments of that period which still remain, their military stations, roads, villas, and walls of defence, the pavements, coins, inscriptions, implements, and works of art which have been dug up in all parts of the country, to prove the energy with which, when they had completed the subjugation of the original inhabitants (no easy task), they sought to introduce the arts of peace.

While the sun shines on the ivy-covered walls of Roman Pevensey, still solid and vast, and the birds sing in the trees on the site of the Norman keep, we pace the enclosure, and see as in a glass, the changes which have taken place in the world since their erection, and the wonderful series of events by which the resources of the country have been developed, and her power increased.

You may see another phase of castle building by driving two or three miles farther to Hurstmonceaux, built by the Fiennes, in the reign of Henry VI.* Mr. Britton† notes that it was in the first year of Henry IV. (1399) license was given to embattle and fortify at Hurstmonceaux, and that, according to Dean Lyttleton, the castle was built soon after the license was obtained. The appearance of the building, however, supports those who give it the later date. By that time a fortress was less needed, comfort more so. The old forms were kept,—crenellated towers, and moat and bridge; but windows were opened in the walls, and massiveness gave place to convenience. Hurstmonceaux Castle is built of brick, with stone dressings sparingly introduced, and is called by some writers, "the oldest *brick* structure existing;" that is, of course, they mean the oldest after the *return* to brick, as a material for building. Even this, however, on inquiry would seem to be not quite correct.

The earliest building known to exist in this country, built with bricks resembling the modern or Flemish brick, is (according to the Oxford Glossary), Little Wenham Hall, in Suffolk, which dates about 1260.

According to Leland, the town of Kingston-upon-Hull, was enclosed with ditches, and a wall "made all of brike," in the reign of Richard II. (1377 to 1399), and in the wall were four "gates of brike." Bricks were then 6s. 8d. a thousand. There is no attempt at ornament in the brickwork at Hurstmonceaux; no details to discover. The brick house we mentioned a short time since, Sutton-park, Surrey, built in the reign of

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* The mortar contains pounded tile—a tolerably safe characteristic of Roman work.

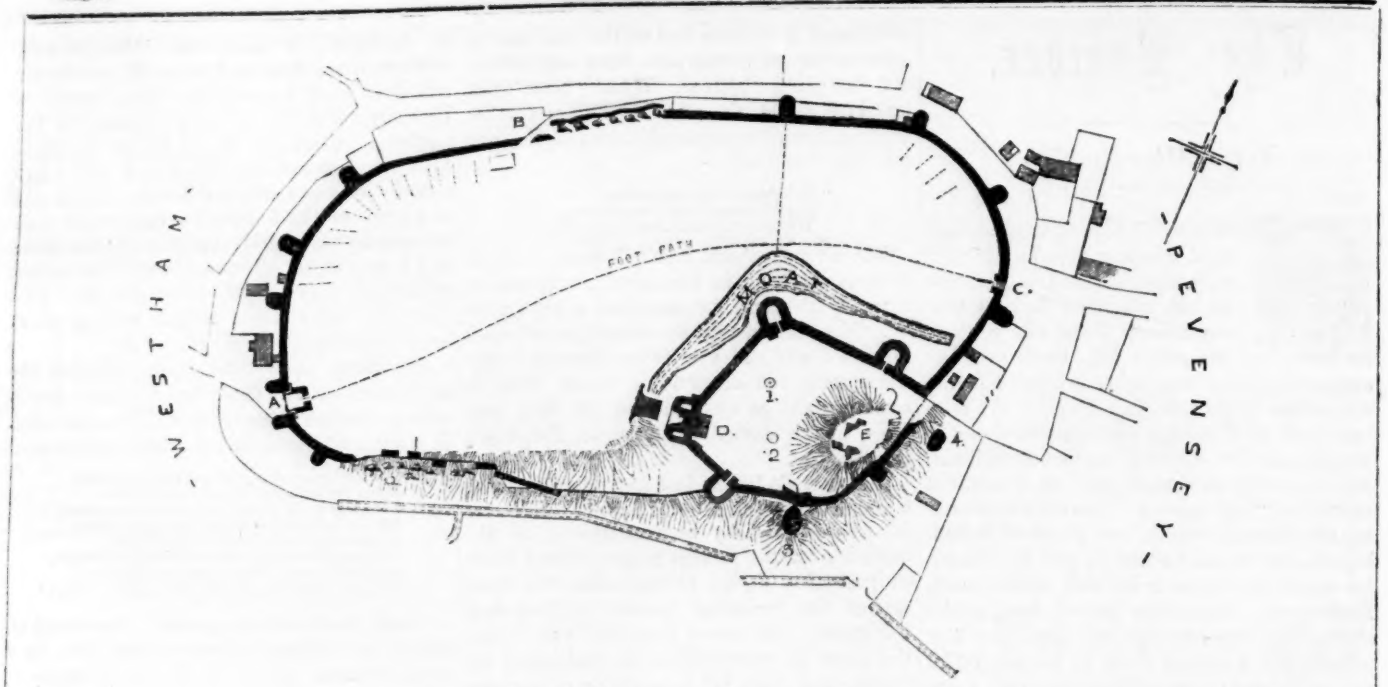
† *Litoris Saxonici*: a term applied to it when the Saxons invaded Britain somewhat earlier, perhaps, in this same century.

‡ "*Præpositus numeri Abulcorum Anderidæ.*" Quoted in "The Antiquities of Richborough, Reculver, and Lymne, in Kent." By C. Roach Smith, F.S.A.

§ Pevensey Castle, and the recent Investigations there. 1853.

* Memorials of the family will be found in the church hard by

† Architectural Dictionary.



PEVENSEY CASTLE, SUSSEX.

Henry VIII. is much more interesting in this respect. As a mass, however, especially from a distance, Hurstmonceaux Castle, is a fine object. The present custodian, a poor "*superantedated* man," as he calls himself, seventy-nine years old, remembers the castle in a much more perfect state. It was furnished and habitable till the year before he was born, when the furniture was sold and the building dismantled. Ivy covers the walls, and trees grow on the site of my lady's chamber.

And now back to Eastbourne, with pleased and pleasant companions.

* * * * *

The night is lovely,—set with jewels: throw up the window, and listen to the rolling water. While we gaze

> "The full-faced moon sits silver on the sea,"

and

> "The eager waves lift up their gleaming heads,
> Each shouldering for her smile."

A VISIT TO THE MOSQUE OF OMAR, JERUSALEM.

THE following notes by Miss Rogers, the daughter of the eminent wood-carver of that name, descriptive of a visit made by her and her brother (Vice-consul at Caiffa), under the auspices of Sir Moses and Lady Montefiore, will interest our readers:—

Wednesday, July 25th, 1855.—At 8 o'clock in the morning start for the Pasha's seraglio: we enter a vaulted chamber, entirely lined with a lilac cotton print; divans all round. Opposite the door sits the Pasha—I am introduced. The dragoman (Gilbert, who speaks good French) translates for me; the Pasha only speaks Turkish. Gilbert leads me to a divan, and opens the curtains of the windows looking over the terrace of the mosque, now half in shade, the outlines of the walls and minarets and domes, throwing their fantastic shadows across it. Several servants are standing around us; coffee is brought in for us; on the table is a white cloth and a tobacco-cellar, two little ugly glass paper-weights, with pictures and a gutta-percha head. Sir Moses is announced. They are in the drawing-room, where we assemble with the Pasha. He sits on the chief divan, and invites me to sit by his side. Before us on chairs, arranged in half circle, sits Sir Moses and several other gentlemen. We start in procession. The Pasha leads the way through curious, tortuous, zigzag turnings and arches, till we exchange into the sunshine: and the wonderful area of the Mosque, the splendid building with its varied surface of colour, light, and shade; its perfect outline; the little rows of columns, casting pleasant shadows on the thorny ground; the little mosques and tombs; the olive trees and shrubs,—are all taken in at one excited and delighted glance, as we traverse the grounds to the foot of the broad flight of steps to the *holy ground*. By this time a large group of Arab and Jewish attendants and soldiers are surrounding us, whose duty it was to accompany us here. All had to take off their shoes: we had to change ours. The yellow shoes brought for me Lady M. wore. I kept on my bronze slippers, which did very well. We enter the wonderful building, darker than I expected to find it; a solemn, gorgeous gloom, recalling the effect of Owen Jones's Alhambra at Sydenham. Very ancient mosaic of glass and stone, in Arabesque florid style, lines the base of the dome. A gallery of arches, like a Norman triforium, runs round above the surface of mosaic richly-stained glass windows, which, from the variety of colour, intricacy yet certainty of design, minuteness of division, have all the effect of transparent mosaic. Within a wooden railing (which I could peep over on tip-toe) was the wonderful stone which, attempting to follow the prophet to heaven, left the earth, and never quite returned to it again. Here it stands, in a very strange position certainly, with not much to rest upon. The large dimension of this rock or stone surprised me exceedingly. The wooden railing is in the upper part pierced, painted, and prettily carved with rich interlacing designs, not unlike the Saxon MSS. decoration: an immense variety of panels in the lower part are not pierced: the elaborate patterns are grounded out. We are now shown the praying-place of David,—a white marble shrine of exquisite design and execution; a recess or niche, supported by two double columns, each column divided into four parts, and quaintly twisted and plaited, not only with itself, but with its sister column. The capitals, such as I have seen in Norman work, very very fine, such exquisite nicety of finish. Now we descend a dark cavernous-looking place, attended by taper-bearers;—are now under the great stone. Here are four places of prayer—one for Jesus, for Abraham, for Solomon, and Aaron, two of which are even more intricate than the one above. I regret I had not time to make drawings of them, but I took notes of them on the spot, and my brother did the same. Upstairs again: examine the mosaics under our feet: in design they are like the doors from the far East exhibited in 1851, of curious interlacing lines,—zigzag,—much variety of colour. The lower portion of the mosque is chiefly surfaced with encaustic tile,—generally blue and white, full of variety in design,—some quite like Renaissance. Out again into the area, where the olive trees and little flowers of red and yellow (of the vetch and goat-beard kind) grow between the stones: we descend steps, almost overgrown at the sides with rank weeds and thorns, to an open stone basin, called Solomon's Pool (supplied with water from Solomon's Pool at Artas). Sir Moses hands me some to taste. Down again more steep steps, looking as if very rarely trodden; we enter a long underground double arcade towards the south: at first, the columns dividing the arcades are square, and sometimes connected; but at the extreme south they are round, and of splendid proportions, for the ground is more excavated, and the roof is higher, giving a strange effect to the low way we came by. Mr. Consul Finn measured one of the columns with the brass measure I gave to him, and found it was 15 feet in circumference, and a stone in the wall, rather larger than most of them, was 8 yards long: we picked up some fragments as trophies.

Up again into the dazzling daylight; enter the Mosque El Aksar under a deeply moulded arch, like Early English zigzag; deep shadow, the whitewash and modern painting of the monograms of the Kaliffs, &c. give an air of newness to the interior; strangely various-formed columns, stunted round arches, round, square, and all-sided pillars: we assemble round the ancient well called *Moses's Well*, and all take delicious drafts from it. The rafters of the church look like marqueterie. They are dark brown and yellowish-white painted. I made a few sketches here. At the south end rises the dome; eight rich high *stained glass windows:* the eight piers are decorated with a Chinese-looking painting; their surfaces of mosaic, as in the other mosque: the transepts are very fine, arched and groined; a beautiful triple arch, very like Early English. Here is a curious excavation, called the "Manger," a shrine and canopy supported by four pillars, with beautiful basket-worked capitals. Mr. Guadella thinks it was the bed of a fountain, where the feast of the rejoicing of the waters was celebrated. The Pasha now insisted on our being led to the chamber under the *Golden Gate*. This is the spot the Moslems are most jealous of exposing. They (the guides) told us we had already seen it, and wished to make us believe the long arcade led to it; but now we were conducted with a file of Turkish soldiers on each side of us towards the gradually sloping descent, the soldiers ranging themselves in a semicircle on its brow, and we went down into the most beautiful vaulted chamber supported by six columns, and the walls divided by pillars of great beauty: high above us two openings in the double dome admitted daylight, and a few astonished and picturesque

heads looking down curiously and anxiously from without. One of the ladies observes, "They help to give an idea of proportion, and steady the eye." Shaded by the white umbrella of Mr. G. we leave this cool retreat. During our stay in the building one of the party leaves us, and returns with his photograph machine, and makes the best use of the short time: such a thing has never been dared before. Mr. Guadella, one of the party, tells me of his visit to Constantinople: he says he has never seen so much colour in any architecture as in this mosque: he enjoyed Athens and the beauty of the Bosphorus, but the visit to-day was worth the journey from England, if he had come with his eyes closed till he arrived here.

We approach the covered piazza in front of the great mosque: carpets are spread for us beneath the airy dome, supported on its delicate columns: the ladies, that is, Lady Montefiore, Mrs. G., Mrs. Consul Finn, and myself, sit down: the gentlemen group around us, but not sitting on the carpet. I cannot help looking up at the beautiful capitals: all are various, and formed of twisted and entwined leaves of the hawthorn: baskets of interlaced work prevail. We become enthusiastic in archæology. After a rest we walk again. Our attendants are gradually swelling in numbers around us: the soldiers fill us in closely: we wait under the vaulted passage, while Sir Moses settles the bachsheeks. He gives 40*l.* to Dragoman *Tannoos*, to divide among the soldiers and attendants, who are crowding round in anxious and greedy groups.

We had been within these rarely-entered precincts *over two hours*, and had seen much more than had ever been shown to infidels. The Archduke Maximilian and Duke of Brabant did not see one-half we did. Our small party had the advantage, and more than that, Sir Moses was known to be liberal.

MARY ELIZA ROGERS.

Tellibere Encampment, under the Walls of Jerusalem, July, 1855.

THE CHEMISTRY OF BUILDING MATERIALS.

IN the course of the last session at the Architectural Institute of Scotland, Dr. George Wilson delivered three of a series of papers on the "Chemistry of Building Materials," some account of which we must give our readers.

In his introductory remarks, Dr. Wilson, after stating that he did not speak as an architect, builder, mineralogist, or geologist, but simply as a chemist, thus proceeded:—

I suppose there are just six great building materials which mankind have used from the earliest times, namely, wood, earth, snow, stone, iron, and glass. The first three, wood, earth, and snow, are especially the appliances of the savage or half-civilized man. Wood, as you all know, is used in the form of the wattled cabin, kraal, tabernacle of boughs, shanty, hut, and log-house; earth appears in the forms of mud-cabin, turf-cabin, clay hut, sun-dried and kiln-burned brick dwellings; and snow is, in the Arctic regions, the only serviceable building material for the Esquimaux; and even our sailors have thought themselves very comfortably housed with snow walls. The second three, stone, iron, and glass, are the special appliances of the highly civilized man,—stone, from the earliest historical periods; iron, very recently, but very extensively; and glass, not including its use for windows or hot-houses, most recently of all.

Of these six, wood may be regarded as the uniter of the savage and civilized builder.

I shall only, in this paper, treat of stone. What qualities are requisite in a good building stone? 1. A compact homogeneous structure. 2. Moderate hardness. 3. Insolubility in water. 4. Non-disintegration by the atmosphere. 5. An agreeable unchanging colour. 6. Non-liability to acquire a coating of vegetable matter.

As to the first, it is scarcely necessary to dwell on the desirableness of a uniform and equable structure throughout the length, breadth, and thickness of a stone. All destructive agents,—pressure, friction, air, water, frost, or vegetable growths, act unequally on heterogeneous masses. Vesicular lava, with a multitude of cavities in it, would plainly be unsuitable, other things being equal, as a building stone, as in its cavities dust would gather, then vegetable growths, and water would collect and begin to dissolve what was soluble, and the destructive gases in solution would wear down the stone. The same objection applies to such a rock as amygdaloidal trap, to be found in our own neighbourhoods; this dark whinstone having cavities in it filled with white bodies resembling almonds, like seed-cakes. Granite rock, as you know very well, is found in such a condition that it may be polished, and preserved unaltered, as regards appearance, for a long time; still, from the fact that you have three different sets of crystals grouped together in the block, with interstices between the crystals, even where they touch each other most closely, it possesses a disadvantage as regards water, air, or vegetable growths, and is more liable to undergo change than a perfectly homogeneous substance. In like manner, in some sandstones, inequalities permit the same destructive agents to act. You are all familiar with those black lines to be noticed in sandstones. These lines frequently result from layers of mica, but sometimes from a charcoally or carbonaceous matter, resulting from the decay of plants which have become fossil within the sandstone. There is no stone not liable to similar insecurity when we have any thing like inequality in structure. Few stones are more beautiful than shelly limestone, yet it needs but to look at its polished surface to see that the cohesiveness and hardness of the shell and its matrix are very unequal, and to perceive that the destroying and disintegrating agents are acting unequally on the surface, and must wear it down faster than they would a mass of statuary marble, all consisting of identical crystals, or a mass of pure sandstone. Even in those minerals which we are accustomed to regard as most solid, most homogeneous, and least liable to change, we very frequently—far oftener than we expect,—find some heterogeneous element, often in very small quantities, yet quite enough, when acted on by disturbing agencies, to upset the equilibrium of all the remainder. One of the most compact of known stones, quartz rock, may have, though the eye does not detect it, some portion of oxide of iron, one of the lower oxides (*i.e.* iron united with a little oxygen), that readily and gradually combines with more; and whenever a piece of rock containing small quantities of iron is exposed to the air, the iron begins to absorb this oxygen, to unite with it, and to increase in volume; and each little particle, acting like a wedge, splits the mass into fragments, or at least greatly lessons its compactness and cohesiveness. Even such stones as the agate, which we see cut into what we imagine to be a most enduring mass, are found to have long lines unequally coloured that admit of liquids penetrating them. Of that fact there is no doubt—indeed, it is now turned to practical account by lapidaries.

The second requisite I named was moderate hardness. It seems almost needless to say, that a stone should not be too hard nor too soft; yet we know practically how much it means. Our builders have pitched upon the best name for indicating this when they use the word "freestone." In Scotland that name is almost solely applied to sandstones; but in England they apply it also to limestones, and simply mean by freestone, a stone that freely cuts and saws, and neither goes crumbling to powder, nor blunts the point of your chisel in working it, nor kills you by filling the lungs with sandy powder, as very hard stones do. Plainly, "moderate hardness" is a character of very great importance. Were mere compactness or hardness the only desideratum, then quartz rock would be preferable to all the stones we know, as we can get it beautifully equal, and approaching more nearly to uniformity of structure than any other rock, very little alterable by the air, and totally insoluble in water; but then it is so hard, that the cost and trouble, and time expended in the working of it, would be enormous, and the destruction of life would also be great. Even the stones we do use, such as granite, are many of them far too difficult to work to be largely employed. It needs no proof, however, to show that these hard stones involve such time, and trouble, and cost, in working them, as greatly neutralize the advantages of fine polish, lastingness, and beauty. Even the sandstones are, some of them, too hard, especially our own beautiful Craigleith stone, which kills so many masons. I have it on what I believe is good authority, that even a softer stone—the Binny—used in the building of Sir Walter Scott's monument, has also been known to be very fatal to the masons working it. I am told, that during the building of that monument, which occupied four years, and employed seventy workmen, eighteen died by what they themselves call the mason's trouble. Notoriously, however, this Craigleith stone is the worst of all. The masons themselves, attribute the mischief to the sulphur in the stone. But it is not the sulphur that does the mischief. It is merely the very fine irritating sandstone powder. As yet we do not know of any efficacious means of preventing such results, unless by driving away the fine powder, and by working the stone in the open air. I do not think that moustaches are really of much avail. The notion arises from the German masons wearing beards; but I rather think that the Germans' exemption from the disease arises from their working in the open air, and from their working slowly—far more slowly than our masons do. I am told that a man can only chisel six linear feet of Craigleith stone in the time he can chisel fifteen feet of Binny stone. If our masons must work under sheds, the only remedy would be some contrivance for blowing away the dust, as they have in the Manchester cotton-mills, where what they call the fluff is blown away; but you always find the workmen themselves the least willing in such things; for it is well known, that many of the cotton-spinners refuse to work with these fluffers, because they say it makes them hungrier, and costs them more to buy their dinners—and what can we do in such a case?

To come to the third point, it seems at first sight very needless to say, that a stone should not be soluble in water. But you must remember, that there are stones used in other countries which are soluble in water, and which are suitable for dry climates, though useless with us—such as alabaster, called also sulphate of lime, and gypsum. The stones which Mr. Layard found at Nineveh consist of alabaster or gypsum, which is soluble in water; and although one ounce of water will only dissolve one grain of these, still the maxim holds true, "the drop wears the stone." It may not suddenly wash away a house; but plainly, for architectural purposes, any stone soluble in water, so that the beautiful lines of carving will suffer by every shower that falls, is not to be thought of in a country like this. What is the use of alabaster columns, or palaces of marble in this climate? The solubility of their material in water is one reason why we should never have Buckingham arches, or other marble buildings, in this country. If you have a statue like Scott's, it must be under cover; and even Scott's statue, where it is, will suffer; for marble, which is carbonate of lime, is soluble in water. It is soluble to a small extent unquestionably; but if the water contains carbonic acid—and all rain does contain carbonic acid—then it dissolves marble more readily, and it should not be used in a climate like this, where all exposed marble statues, pillars, or carvings, are infallibly rounded on the outline by every shower. For exterior ornament our sandstone is infinitely preferable. But when I speak of solubility in water, it is not with the purpose of merely alluding to alabaster or marble. I would direct your attention to this very important fact, that with exceedingly few exceptions, all building stones contain something soluble in water, and that if water once begins to dissolve the stone, the integrity of the block is invaded, and sooner or later it crumbles. We are not in the habit of thinking of granite as having much to do with solution in water. We make great fountain basins of granite in such a crystalline condition as resists the action of water for ages; but there are other granites, not distinguishable by the eye, or chemically, from those enduring ones, which rapidly crumble when exposed to the action of water; and they crumble because one of the constituents of granite—the one

which gives it its colour, viz.—felspar, which is red in one and white in another block, is the alkali potash or soda, united with silicic acid. These alkalis are readily soluble in water. They are kept from dissolving if firmly united with a certain amount of silica, as they are in glass, but in certain conditions, very obscure, the power of solution is recovered by the alkali [as in soluble glass and in silicates used in solution for hardening more perishable materials, although these latter being based on lime when once dried, are not so likely to suffer from the influence of water as the silicates based on such alkalis as potash or soda], and the rain acting on the granite, begins quickly to dissolve the alkali and the felspar gives way; the black mica and the glass-like particles of quartz are separated, and the whole mass breaks down. I am anxious to impress on all, that in the selection of a building stone, apart from its not being in mass, or altogether soluble in water, we must keep in mind to what extent it contains a single thing soluble in water. Our own whinstones and trap rocks are in the same predicament as granite.

Sandstone is one of the very few building stones which are quite insoluble in water, and that is one of the many excellences it possesses as a building material. It is not itself in mass soluble in water, and frequently it contains not one per cent. of soluble matter in it; so that, though it absorbs water, it does not crumble in the way that harder rocks, such as granite and whinstone, very readily do.

I now come to the fourth point, "non-disintegration by the atmosphere." That after all is the most important point the chemist has to deal with. There is no stone—absolutely none—quite indifferent to the action of the air, and which does not undergo some change of the nature of a destructive one. I may point, however, to one seeming exception, an exception proving the rule; namely, a very remarkable building stone from India, called *laterite*, from the Latin name for a brick. It is found on the west coast of India, occurring partly in cliffs rising high up on the sea-coast, and partly forming superficial masses over great districts which are wholly unfertile. It has this remarkable peculiarity, that when you dig it, it is soft, while at the outer surface, if it has been exposed, it is a hard stone. If you remove the hard external coating, then you come to a mass as soft, in some portions, as cheese. Other portions, not so soft, can be cut with the spade, so that they shape it into blocks of almost any size. Then it rapidly hardens like Roman cement, and becomes massive stone. The old Inquisition at Goa, and the old Portuguese Cathedral, as well as the old Pirate Forts which abound along this coast, are constructed of laterite; and indeed it is used in India in preference to any other building stone, where it can be had. It results from the decay of granite, or syenite rock like granite, and a rock very rich in felspar, and containing much iron. When I come to speak of mortar, I shall recall your attention to this stone as presenting us with a great deposit of what may be called native Roman cement, which may be dug soft, and then hardens itself into the hardest mass. We have no such stone in this country. The stones found in most parts of the world rapidly give way under the atmosphere. It would be difficult to enumerate all the ways in which atmospheric agencies affect building stones. Excluding electrical discharges, I will notice—1st. Alterations in temperature, causing unequal expansion and contraction—stones irregular in structure, and conducting heat unequally, being liable to be split, from one portion expanding more than the other. 2nd. The absorption of water by the pores present in the most solid stones, followed by the freezing of the water. Water, in freezing, as we all know, forms crystals of ice, occupying a much larger space than the liquid water did, and thus it may split the stones to fragments. I need not enlarge on the manner in which water acts destructively, coming from the atmosphere. Water finding its way into the most porous stones, as indicated under the previous head, very seldom fails to find something it can dissolve; and dissolving that, it lessens the compactness and cohesion of the stone. The truth is, that the more we look into the matter, the more we find, that with the exception of the metals—such bodies as charcoal, sulphur, and a very few others—there is scarcely a chemical compound not soluble in water. I do not think a chemist would like to say that any body was insoluble; but there are multitudes of bodies which we are in the habit of putting down as insoluble—meaning by that, that they are so slightly soluble, that for practical purposes, whether in reference to pure water, or in using chemical tests, we can disregard their solubility, though they are nevertheless *so* soluble in water, that in the course of years the action of that liquid upon them affects them, and ultimately causes very extensive changes in the condition of the mass. 3rd, More important than any of these is the direct corroding action of active chemical substances. They are not very numerous, and their action on the whole is very simple. The most important of them, probably, is carbonic acid. We always have carbonic acid in air, and can detect its presence by putting out a little limewater in an open vessel. All burning, all the respiration of animals, all decay of vegetable matter, and all furnaces pouring forth gases into the atmosphere, as well as many mineral springs, are continually adding carbonic acid to the air; and although we have a wonderful agency for diminishing it, in its consumption by plants during sunlight, still there is a surplus over, and that surplus is constantly corroding all our buildings. Carbonic acid does not act so much as a gas as when dissolved in rain-water. Rain-water, with carbonic acid added to it, has the power of dissolving, for example, marble, carbonate of lime, and phosphate of lime. It can also dissolve carbonate of magnesia, present in certain limestones, such as the Bolsover limestone employed in the building of the Houses of Parliament—a stone containing magnesia and lime united with carbonic acid. This stone is not soluble in water alone, but is distinctly soluble in water containing carbonic acid. This carbonic acid acts with great energy on such stones as granite, in certain conditions; but we do not understand as yet, otherwise than imperfectly, why it is, that of masses of granite, one will remain unacted on by atmospheric agencies for an indefinite period, whilst another will go crumbling down, and in the course of a few weeks will often be reduced to a state of utter disintegration. In granite you have three constituents; the one glass-like crystals of quartz. These crystals are like hard, brilliant, transparent obelisks. They may be coloured like the Cairngorm or amethyst, which are yellow, brown, or purple crystals of quartz that have shot up from a mass of granite or similar rock. Then you have always a black-looking body, called mica, which is not altered by the air. In addition, you have a third constituent, that gives the white, flesh, or red colour to granite, namely, felspar. It has either potash or soda in it. It is on that potash or soda, in certain granites, that the carbonic acid of the air, dissolved by rain-water, acts so injuriously. The acid begins to extract alkali from the felspar, and the felspar crumbles down ultimately into a white clay—a process continually carried on, and assisted artificially in Cornwall and Devonshire, with a view to obtain clay for the potteries. The condition of granite which the Germans call diseased granite, is perhaps the best example that can be given of the remarkable power of one of the atmospheric agents—carbonic acid dissolved in rain-water—in breaking down the hardest stones.*

* To be continued.

THE PARKS.

IF there is any portion of this great metropolis that ought to be held sacred to the objects of original use it is that reserve of open space called St. James's-park. Being nearest to the centre, the requirements of a population—grown to an extent little contemplated when the reserve was first laid out—cannot dispense with one rood of its grassy surface. The compacted cities of Westminster, Pimlico, Kensington, Bayswater, and numerous other districts of London (any one of which would be, in extent and number of houses, a city in any other country), have expanded themselves far beyond the bounds of all the parks; so that the sylvan and remote promenades of former days have now become the nursery walks of infant London, as essential and indispensable as the lungs to the breathing body.

Of late years the care of officials has been exercised, not to preserve these spaces in their integrity, but rather to nip and curtail public liberties,—conceding to favoured individuals, in many instances, large portions—as in Regent's-park—of the central turf.

Various inclosures have been fenced off in this latter park, withdrawn from the public liberty, and appropriated to the fortunate occupants of insulated mansions. Nearly 100 acres have been excised in this way; one portion of the external boundary—a strip of from 300 to 400 yards, about four acres in extent,—was leased to a friendly applicant, lately deceased, and a bridge across the canal, with an entrance designed for the use of Portland-town, was consigned to the privacy and solitary use of that favoured individual. Various applications were made to the authorities by the inhabitants for the freedom of this approach, but the answer was ready: "It has been already disposed of for the life of the occupier of a house in a nook opposite to St. John's-wood Chapel." That excuse no longer exists; let the inhabitants now look to it.

The Commissioners of Woods and Works are the arbiters of these matters, and have to deal with all the urban parks: if their management be no better than that of the *Woods and Forests*, bad indeed will be the issue for the generation now crowding upon us.

The matter which now, however, excites public interest, and to which several years back allusion was made in the *Builder*, is that which more nearly touches the vitality, or at least the health, of the multitude. St. James's Park—the most perfectly planned and planted of the people's pleasure-grounds—is, it seems, threatened with an eruption and curtailment, as destructive of all that has been done already for ornament, as it is absolutely useless in its end and aim.

A road is contemplated, nay staked out, to conduct from St. James's Palace, to cross the park, and the water by a bridge, and *to lead nowhere* in a continuous route; it is to end at the centre of Birdcage-walk, and at right-angles with it! For what object? Is it to make an easement for the world, so far from royalty as to be out of eye and earshot? It is certainly for no convenient public purpose, for such an innovation would cut away acres of green sward and whole bosquets of shrubbery. The road at present *patent* is by far the largest causeway of London; it leads to an exit, Buckingham Palace-gate, and runs direct to Belgravia and Pimlico. Already, to enlarge it, several acres have been covered with gravel, and a great portion (sufficient to parade a regiment or two) has been inclosed for the privacy and "*éloignement*" of the Palace. Her Majesty, whose popularity is equalled by that of no other sovereign, could never have been advised of the spoliation now meditated.

It would be hard to walk through the ornamental plantations of St. James's (for the completion of which all credit is due to those who designed and carried them out), and find an opportunity for contemplation in solitude. When, however, the air is balmy, and the sun shines forth, no landscape garden can present a higher scenic effect. On these occasions sportive children recreate themselves through every open space, and the toil-worn mechanic, or valetudinarian, who can no further migrate, enjoys, if not the fresh breeze from Surrey hills, at least the poetry of florid nature. The *verdant pool*, if not altogether fragrant, glitters in the sheen; and the many-varied plumage of aquatic birds induces a momentary forgetfulness that we are in the core of the metropolis. The abbey's massive towers, the spires, the statued columns, the colossal torsi of Westminster Palace, and the nearer Horse Guards belfry, seen through and above the trees, lend an impressive force and magic to the scene.

Is all this to be marred, by turning the tide of commerce through the fairy land? A straight causeway, with its endless torrents—its dust or water carts? No—forbid it all, good taste.

There was a hint given in the *Builder* some years back, of a route across the park, in direct continuation of Pall-mall—that would strike in upon Constitution-hill, half-way between the Colossus Arch and the Palace, and form a direct approach to Hyde-park-corner, *avoiding the hill* of St. James's-street; whilst at the same time that access would be convenient for Pimlico, or even for Westminster.

The improvements meditated in that quarter, leading to Victoria-street, would be adequately subserved by the elongation of Pall-mall—but there may be an obstacle—Lord Sydney's house, and *that alone*, should be pulled down. Certainly, that causeway should pass in front of Lord Ellesmere's house (at about 50 feet distant); and the right of way to Westminster, must involve the permission to pass in front of the Buckingham Palace at a respectful distance of about 200 *yards:* however, when we reflect that there is no other metropolitan palace in Europe, that is not approached by public highways at a still nearer space; and above all, when we consider that while the citizens (*en masse*) have no opportunity for rural retreats, whilst our gracious and most-deservedly popular Queen has many glorious palaces, we would hope that no partiality for reserve shall ever debar the inhabitants of London from the free use and enjoyment of all of space that crowded civilization has left for their accommodation and enjoyment.

Whilst on the subject of parks, it may not be inopportune to repeat a requirement long needed, in a causeway for all sorts and conditions of carriages and men. The inclosure of Hyde-park extends for more than a mile from Apsley House to Kensington on the south, and from the Marble Arch to Notting-hill on the north; on both sides there is a great and widely-extended population, and yet after nightfall throughout the distance there is no thoroughfare for foot passengers; and even by day, none for hired carriages! London in the nineteenth century being thus cut off from all intercommunication as to these important districts. A road from Victoria-gate over the *massive Serpentine bridge*, opening out upon the grand *chaussée* lately planned and laid out by Mr. Jackson, through Brompton, could injure no interest nor prerogative, and would be of incalculable value to far outlying residents. This would conduct to and between the long anticipated National Gallery, the Battersea-bridge, and regions thereabout, to Bayswater, Kensall, &c. &c. The swelling tide of population demands this opening, and there would appear to be no obstacle beyond the latent or supposititious powder magazine and its corporal's guard. The profuse waste of masonry lavished on this *model* of Waterloo-bridge would seem to have been achieved for no other purpose than the road recommended.

The old city presents numerous inexplicable straits, such as *Temple* and *Holborn Bars*, and *Paternoster*, with other cranky alleys, *intra muros:* outside, the venerable Wych-street, the neck or scrag of the Strand, between St. Clement's and St. Mary, *cum multis aliis*,—look at the wide avenues of low Pimlico—how light, how airy! and yet these are the only redemption for *that* level of swamps. Look again at the roads of Old Brompton, opposite the Oratory, an arena large as the Mall. This is the secret to make new, and even crowded quarters, tell. It is to be hoped that the authorities of *Woods and Works* will take a hint from private men acting in their own interests, and that a great and thriving commercial people may not be obstructed in their advance, nor cribbed in their intercourse, through somnolence or want of taste, on the part of those to whose care and judgment such matters are confided.

QUONDAM.

TOWER OF ST. MARY'S, TAUNTON.—A motion to authorise all such measures as may be thought necessary for the effectual repair of the tower, and to rate the inhabitants and parishioners of the said parish for such repair and the expenses attendant thereon, has been lost, on a poll, by 420 votes against 414.

ARCHITECTURE IN PRUSSIA.—We are told that the King of Prussia has given two prizes, of 300 thalers each, to be competed for by the Architectural Society of Berlin.

HOLLAND, THE ARCHITECT.

DRURY-LANE THEATRE.

WITH reference to the notice of Mr. Henry Holland, the architect, and his works, in the *Builder* of the 8th inst. and especially the question whether he was the architect of the East-India House, I beg leave to say, that although Mr. Jupp was the recognised surveyor to the East-India Company, yet Mr. Holland was the architect or designer of the East-India House in 1799 and 1800, a course of proceeding, I believe, not unknown in more recent years.

My authority for this is, that I have had in my possession for these last forty-eight years a collection of working and other drawings of the East-India House, plans, sections, and numerous details at large, which I obtained out of Mr. Henry Holland's office at Hans-place, in the year 1807, when the establishment was broken up, about nine months after his death, through Mr. Rowles, the nephew of Mr. Holland's brother and executor. Some of them have Mr. Holland's own handwriting, and one (a working sketch of heights) this memorandum:—"Section of Lime-street front, as settled by Mr. Jupp," showing, I presume, that Mr. Jupp, as the established surveyor, had some supervision of the works.

I have also drawings of Carlton House ceilings, and had many other drawings of that edifice, Brighton Pavilion, and other buildings executed by Mr. Holland; also a plan of the old Covent Garden Theatre, as altered by him for Mr. Harris, then proprietor, in 1792, which was burnt down September 20, 1808.

In addition to those works named in your paper, I may add that he did a great deal of work for the Duke of York, at Oatlands; the Duke of Bedford, at Woburn, &c.; Mr. Whitbread, at Southill; and Earl Spencer, at Althorpe and Wimbledon, of which I had many, and still retain some drawings.

The well-known Claremont House, near Esher, was his work, through the connection of his relative, "Capability Brown," who laid out the grounds.

I may likewise mention that he was the planner of Sloane-street and Hans-place, a speculation of his, where he built himself what was then considered a handsome villa, and a charming suburban retreat. The white brick houses on one side of Sloane-street, were those first erected by him detached, and the spaces were afterwards filled up as builders could be found to take the ground.

The Albany-chambers in Piccadilly, of which I had some drawings, were, I believe, a scheme of his on the gardens of York House; the front or main house being the work of Sir William Chambers.

Henry Holland was also, I believe, the architect of Sir W. W. Wynn's house, in St. James's-square, and of Brooke's Club-house, in St. James's-street, the front of which last has been partially altered within these few years: they bear his impress.

Allow me to add, the present Drury-lane Theatre was commenced on the 21st October, 1811 (not the 29th), Benjamin Wyatt, architect, Henry Rowles, builder, and was opened 10th October, 1812.

The amount of contract was.....	£112,750
Additional works, fittings, and expedition money	13,040
	£125,790

This was, I believe, the first *bonâ fide* contract for a building entered into in London; the only previous ones, that I know of, were the hospital at Yarmouth, by Peto, and a small barrack at Hampton-court, by Tredgold.

The original design by B. Wyatt, contemplated an Ionic portico in Brydges-street, and a colonnade in Russell-street, but want of funds prevented the execution. The present projection in Brydges-street was done by Soane some years after, and the colonnade in Russell-street, by Beazley, when he altered the interior or auditory, during the lesseeship of Elliston.

I make these remarks because I was employed as Rowles's superintendent, from the first day of commencing to the drawing up of the curtain, when the late duchess of St. Alban's, then Miss Mellon, performed *Nell* to Dowton's *Jobson*, in the farce of the "Devil to Pay," the play being "Hamlet."

Of the previous theatre, by Henry Holland, I had several drawings, but in the lapse of years have lost or destroyed them.

H. B. HODSON.

SLATE AND ASPHALTE PIPES.

THE importance of a good supply of water is so strongly and increasingly felt, that many towns are incurring the great expense of laying down long lines of cast-iron pipes, in some cases more than twenty miles in length, in order to obtain water from pure sources. To diminish this expense, it is proposed to use pipes made of a combination of slate, asphalte, and iron, which can be supplied, we learn, at little more than *one-third* the cost of cast-iron pipes, while in point of strength they are sufficiently strong to stand the internal pressure to which pipes in such situations are subject: they have been proved by hydraulic press to a pressure equal to that of a vertical column of water 500 feet high, and it is stated that a much greater pressure than this is required to burst them. The kind of slates used for this purpose are such as are too small for roofing houses, and for which there has not hitherto existed any use whatever, so that vast quantities are thrown away as rubbish at all the quarries. In forming the pipes the slates are bound round a cylindrical mould, overlapping and breaking joint with one another, very much as on the roof of a house, or like the scales round a fish. A continuous spiral of hoop-iron is used to bind them round the mould, and the whole being heated, the interstices are filled in with fluid asphalte, and thus is formed a kind of wicker or woven work of slates and hoop-iron, cemented and concreted with asphalte. The adhesion of the asphalte to the slate is found to be as strong as the adhesion between the laminæ of the slate itself, and thus the whole becomes nearly as strong as a homogeneous thickness of slate.

These pipes have as yet been made of only 12 inches and 24 inches diameter, and 7 feet in length. They cannot conveniently be made of less than 10 inches diameter, but they can be made larger than 24 inches, and longer than 7 feet if desired.

Their resistance to transverse strains has been tested by loading them in the middle, when supported at the two ends, with a weight of six tons, which is a greater strain than they are likely to be subject to in practice. In substance, they are made three times as thick as cast-iron pipes, and are then exactly equal to them in weight. A cast-iron socket is affixed to each pipe to allow the junction to be made in the usual way with spun-yarn and lead.

The specimens of these pipes at Messrs. Braby's slate-yard, near the Surrey foot of Hungerford-bridge, have been proved to rather more than 500 feet head of water, and were exposed to the frost of last winter without sustaining any injury. Of course at this early stage we go no further than inviting for them the consideration of those who are interested in the subject.

ROOF-GARDENS.

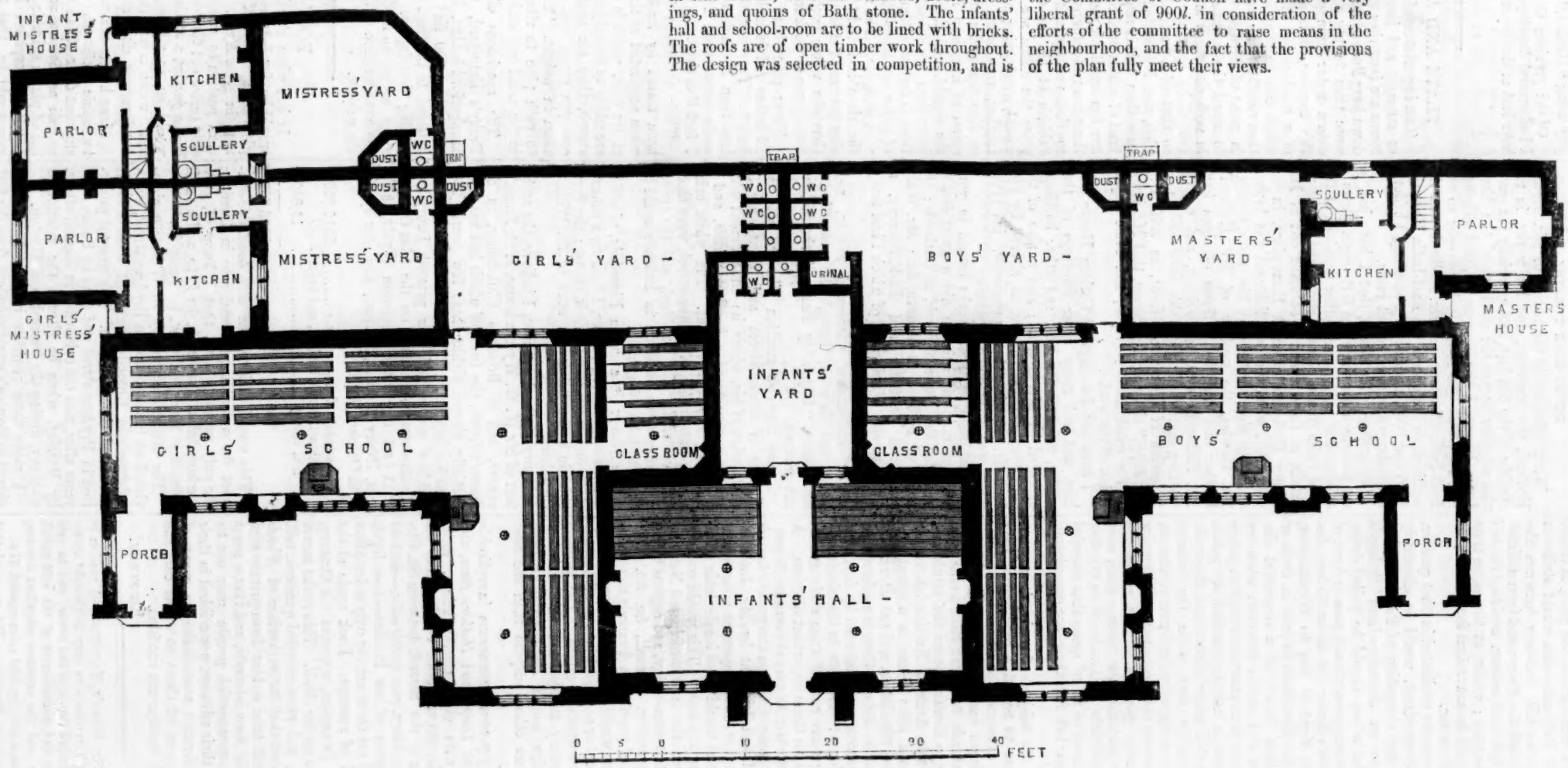
IT has often struck me how much better it would be, for London houses especially, to have glass roofs instead of the heavy tiling or slating now in general use. I will leave all the practical portion to many of your able readers—I only throw out the hint; and in so doing, think that a *garden*, a *smoking-room*, or an *observatory*, would be, in all respects, a gain upon "the loft" which is now the receptacle for old worn-out furniture, dust, and spiders.

Many houses are now being adapted for photographic purposes, and I do not see the slightest difficulty in encouraging horticultural as well as chemical science; and if you wish a list of plants suitable for such a glass room in a London atmosphere, I will send one. Another gain would be, that the house would be much warmer, as slates and tiles are never so well fitted as to be without draughts: putty and thick glass prevent these.

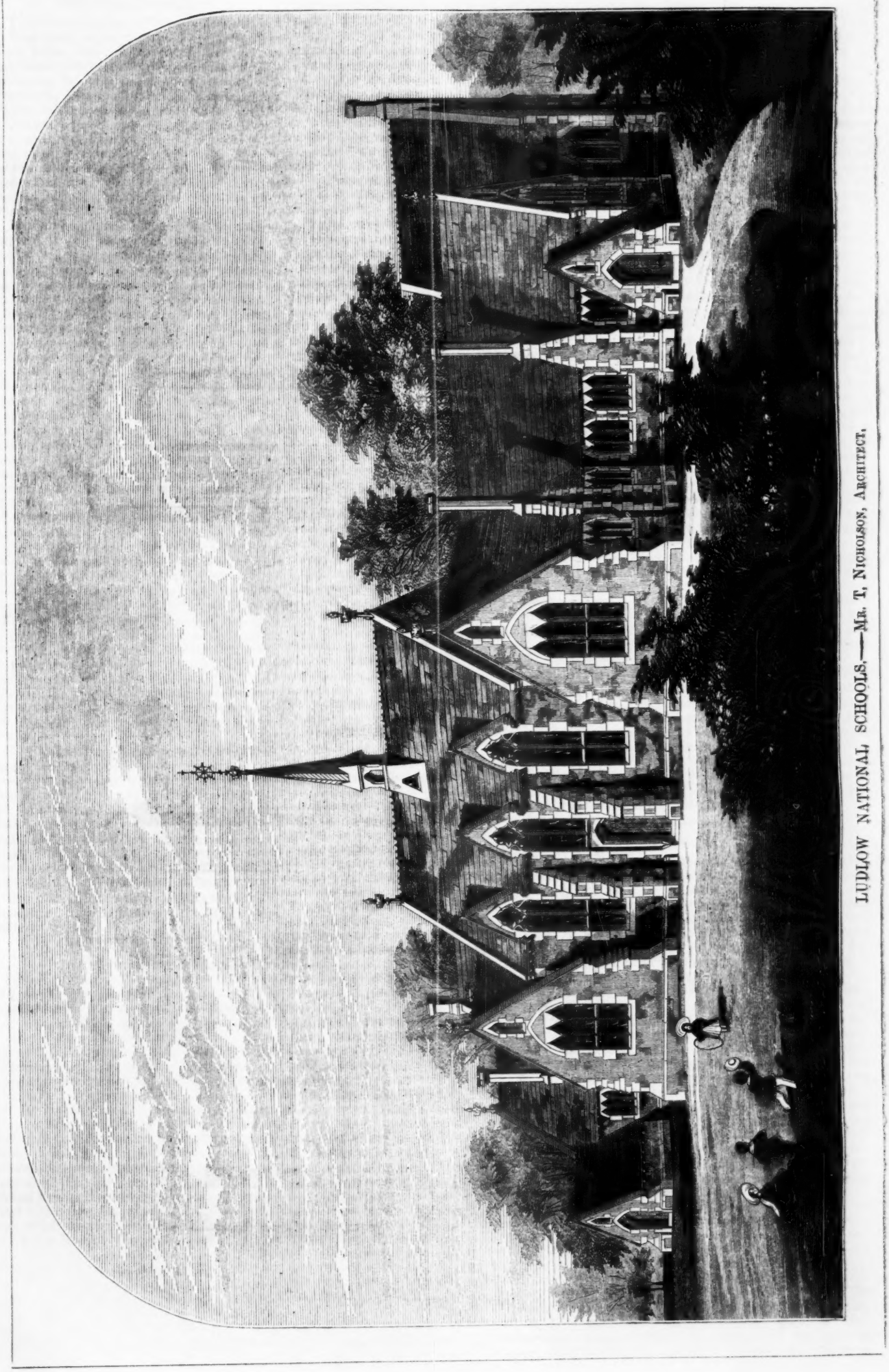
Q.

LUDLOW NATIONAL SCHOOLS.

THESE schools now in the course of erection, at Ludlow, are for the accommodation of 600 children—200 boys, 200 girls, and 200 infants, and have attached to them three distinct residences for a master and two mistresses. They are to be built of rubble masonry, arris pointed in blue mortar, with the windows, doors, dressings, and quoins of Bath stone. The infants' hall and school-room are to be lined with bricks. The roofs are of open timber work throughout. The design was selected in competition, and is the production of Mr. T. Nicholson, of Hereford, architect to the Hereford Diocesan Church Building Board. The builder is Mr. Coleman, of Chaxill. The cost of the whole scheme, including the purchase of the site, fencing the ground, &c. will be about 2,400*l.* towards which the Committee of Council have made a very liberal grant of 900*l.* in consideration of the efforts of the committee to raise means in the neighbourhood, and the fact that the provisions of the plan fully meet their views.



PLAN OF LUDLOW NATIONAL SCHOOLS.



LUDLOW NATIONAL SCHOOLS.—MR. T. NICHOLSON, ARCHITECT.

MEETING OF THE YORKSHIRE ARCHITECTURAL SOCIETY.

THE annual meeting of this society took place at Pontefract, on Tuesday and Wednesday in the week before last. The members assembled at All Saints' church, on Tuesday morning. After examining the old ruin, the party proceeded to the Castle, accompanied by Mr. Wood and Mr. Copley, both of whom, together with Mr. Fox, pointed out objects worthy of attention. Thence they proceeded to the Anchorite's Cell recently discovered in Southgate, after which they inspected the interior of St. Giles's. An adjournment then took place to the Elephant, where the annual public meeting was held. The room was decorated.

Major Waud presided, and in his address referred to the course too frequently adopted with regard to repairs of ecclesiastical buildings. The churchwardens, he remarked, having covered up every deficiency with plaster, had frequently concealed the open roof of the church with a flat ceiling, with cornices copied perhaps from the squire's dining-room. They had cut away the bases or capitals, and frequently the sides of pillars, for the most insignificant purpose—perhaps to make a more convenient seat for the churchwarden or the squire's lady. Many were aware of instances of this kind. They then covered all with plentiful coats of white and colour wash, and having thus succeeded in concealing or disfiguring most of the architectural beauty of the original church, they sought to hand down their names as benefactors of the church in a tablet bearing an inscription to the effect that the church was beautified and renovated, at such a time, by so and so, churchwarden.

Papers were then read, by the Rev. R.E. Batty, "On the Priory of S. Oswald, at Nostel," and by the Rev. Mr. Gatty, on "The Ecclesiastical Bell." A paper by Mr. J. W. Hugall, on "The Past and Present State of Ackworth Church, with some Topographical Remarks," had been announced, but the reading of it was postponed till the following day. The meeting then broke up, and a party proceeded to inspect the Priory-field, the Old Hall of the Talbots, the Stump Cross on the road to Ferrybridge, and the old Norman church at Birkin. They returned to the Elephant, and partook of dinner, Major Waud presiding.

On the following day the members and their friends had an excursion to see various churches and other objects of interest in the vicinity, as at Wragby, Ackworth (where the rector read the paper by Mr. Hugall, the architect of the church, in his absence, "On the Past and Present State of Ackworth Church, with some Topographical Remarks"), Badsworth, Kirk Smeaton, and Womersley. The excursionists then returned to Pontefract.

The next meeting may possibly be held at Doncaster, in conjunction with the Lincoln Society.

MANCHESTER.

New Workhouse.—The foundation-stone of a new workhouse was laid on 5th inst. The guardians succeeded in purchasing about forty-five acres of land, eligible as a site, on the Bongs Estate, at Crumpsall, about three miles from the centre of the city, for about 150*l.* an acre. One object of the new establishment was to get land so that the labour test could be properly applied. The stone was laid by Mr. Rickards, chairman of the board. The first range of buildings will contain, besides a porter's-lodge, on the left-hand side, a waiting-room, a bath-room, and a sleeping-room for females. The same arrangement prevails on the right-hand side for males. A courtyard, the central portion of which will be planted, divides these rooms from the principal range of buildings, which extends across the enclosure, being 420 feet in length. The central portion will be four stories high, and the wings three stories. The rooms for the principal officers will be in the lower story, at the centre; the upper stories being devoted to the female paupers. There will be two sets of day, washing, and bath rooms, those for able-bodied females being on the left side, and those for males on the right, all 12 feet high. The two ranges of rooms will be separated by a corridor extending the entire length, lighted at either end by openings in the ceiling, and through recesses in the walls. There will also be in this range a room or chapel 57 feet long and 18 feet wide, devoted to dissenters. In the basement story of this pile the domestic offices will be situated. The chapel for the inmates occupies a plot a little further behind, and stands detached from the main building. It is to accommodate about 800 persons. Still further in the rear is a third range, parallel with the others, and extending also across the enclosure. This will be three stories high. The central portion is for women with their children, and is to comprise two large day-rooms, with sleeping-rooms over them; the wings will be occupied, one by girls and the other by boys; for each of these there will be a school-room, day-room, dormitories, washing-room, and bath. The washhouse and laundry department, on a necessarily extensive scale, is still further within. The last range of buildings will have the general infirmary in the centre, four stories high; and the wings, three stories high, will be appropriated to the idiotic, epileptic, and imbecile paupers, male and female, accommodation being provided for 250. The general arrangements do not include a common dining-room, it having been found that where disturbances have occurred in the workhouse they have generally originated in these gatherings. The cooked food will pass from the kitchen (beneath the chapel) to a cutting-up room, and be there apportioned for the inmates. Four hoists will then convey it to four serving-up rooms, whence it will be forwarded on warm-water trucks to the day-rooms, for distribution to the several wards, where only about forty will dine together. Various yards are to be provided for the different classes of inmates, and every requisite for the active occupation of those capable of labour. The immediate accommodation to be provided is for 1,660 inmates, thus classified:—Able-bodied, male and female, 745; women, 76 (with infants, 76), 152; idiots, epileptic, and imbecile, 248; children under sixteen years of age, 255; reception wards, male and female, 60; hospital (for the requirements of the house), male and female, 200: total, 1660. It is intended that the aged and infirm paupers shall remain at the Bridge-street Workhouse. The plans were prepared by Mr. A. Mills, Messrs. Mills and Murgatroyd being the architects to the board; and in order to ensure every modern improvement, and the best form of construction, he inspected the chief buildings of this kind in the country, accompanied, in many instances, by a deputation from the board. After some modifications suggested by the board, or the clerk, they were finally sanctioned by the Poor-law Board. The contracts have since been let, and considerable advance has already been made in excavation, road-making, and building the arched cellaring. The contractors are—Messrs. D. Bellhouse and Sons for the carpenters, joiners, bricklayers, and masons' work; and Mr. Stephen Longdin for the iron-work, including the cisterns, which are all to be of this metal. The cost of the land, including the field for the road, is something over 13,000*l.*; the architect's estimate for the building is 37,000*l.*: making a total of 50,000*l.* There is to be no unnecessary expenditure in architectural display: the whole is to be substantial, the walls being of good red brick, with stone dressings in the more prominent parts.

St. Mary's Hospital.—The committee of this hospital having decided to erect a new building in Quay-street, the first stone, according to the local *Courier*, was laid on Monday before last, by the Bishop of Manchester. The plans selected are those of Mr. N. G. Pennington. From the principal entrance in Quay-street is the hall, 16 feet square, the walls having pilasters and an entablature of the Corinthian order. Fluted Corinthian columns and entablatures mark the division between the entrance-hall and vestibule. The vestibule and staircase are 30 feet by 22 feet, and 30 feet high, lighted from the top with an ornamental lantern light. The walls are decorated with ornamented pilasters, cornices, panels, and entablatures. Ascending a short flight of steps, the level of the library, museum, and lecture theatre floors are attained, and these are entered by large glass doors, with inscriptions overhead. A corridor, 5 feet wide, divides the library and museum, and is the means of access to the lecture theatre. The library and museum are each 18 feet by 24 feet, and have galleries half way up between the floor and ceiling for access to the books. Circular iron staircases descend from the ground-floor to the gallery floors in each room. The lecture theatre, lying behind the extent of the library, museum, and corridor, is 42 feet 6 inches, by 18 feet 6 inches. Both library and museum, as well as lecture theatre, are lighted with lantern lights. The rest of the ground-floor is appropriated to three prescribing rooms, a matron's parlour, and a board-room fronting to Quay-street; a waiting-room, 28 feet by 16 feet 6 inches; dispensary 16 feet 6 inches by 15 feet; drug store, and covered yard. On the first and second floors are ten wards, averaging 21 feet by 15 feet each, and four wards averaging 16 feet by 12 feet each. On the first floor is the ladies' committee-room, surgeon's parlour and bed-room, and matron's bed-room. There is also a nurse's kitchen and bed-room to each floor. On the second floor is an operation-room, 15 feet by 39 feet. Baths, lavatories, water-closets, and store-rooms are provided for each floor. The height of the wards from floor to ceiling is 12 feet in the clear. The elevation to Quay-street is Italian in design. From the ground-floor to the first floor the building is faced with ashlar stone, having rusticated pillars and entablature above. The principal entrance consists of Corinthian columns and entablature, with a carved archivolt round the doorway. The centre compartment is faced altogether with stone, and the windows have carved architraves and jambs. Stone cornice, parapet, and blocking surmount the whole.

The City Gaol.—This building, completed only about five years since, to contain 432 inmates, is already found to be too small: and at a late meeting of the City Council it was proposed to add 400 new cells. As to the cost of the proposed extension, the chairman of the gaol committee gave it as his own opinion that the work might be done for something like 24,000*l.*

New Churches.—Notwithstanding the badness of trade and severe taxation, we are glad to perceive that Manchester is now either actually building, or actively engaged in canvassing subscriptions for, no less than five churches—one in Hulme, another in Ancoats, another in Miles Platting, another again at the top of Rochdale-road, adjoining Collyhurst, and lastly one for the population of Cheetwood and Strangeways, to be built in Waterloo-road.

PROVINCIAL NEWS.

Lynn.—On all sides, says the *Norfolk Chronicle*, new buildings of a public character are springing up at Lynn. Last year the Athenæum and Corn Exchange were erected, and at present there are in course of construction a new union workhouse and public baths. The Mortuary Chapel, built three or four years ago in the South Lynn Cemetery, is being pulled down, it being rendered useless from the South Lynn burial-ground, under the new arrangement, forming part of the borough cemetery, and chapels being required in a different part of the ground, in the construction of which the materials will be used. Mr. Stimpson, who is building the baths, has also the contract for the chapels in the burial-ground, which will be immediately commenced.

Holbeach.—The building of the new Corn Exchange here is progressing: the walls are sufficiently high to lay on the roof. The alterations at the gas-works, which are being enlarged, are going on slowly. The present supply of gas is very limited, and the town is only indifferently lighted.

Melton Mowbray.—The opening of the Corn Exchange took place on Wednesday in week before last, by many of the directors, shareholders, and their friends, dining together in the New Hall. The building is situate in Nottingham-street, and is of red brick and stone. The principal entrance is approached by a short flight of stone steps. The flooring of the entrance-hall is composed of Minton's encaustic tiles, having three centres, which were presented to the directors by Mr. N. Whitchurch. There is

a room on the right hand side for the Melton Public Library, and on the opposite side is a room devoted to the Savings' Bank. The upper rooms are approached by a stone staircase: one of them is used as a news-room. The Corn Exchange room is at the back of this building, the entrance to which is under a glass roofing. The hall is 80 feet long by 40 feet in breadth, and 35 feet in height: the roof is principally composed of Hartley's rough plate glass, and there are no other windows. Over each of the fireplaces is carved stonework. The walls of the room are panelled, in which provision is made for a system of advertising by placards, and between the panels there is a ventilating apparatus. The architects of the building were Messrs. Malinson and Son, of Nottingham; and the builder, Mr. Norman, of Leicester.

Weymouth.—Measures are now about to be taken towards ensuring an efficient supply of water for the whole of this borough. Mr. Hawkesley has been appointed engineer to superintend the works, which will produce a constant supply for the whole of the town.

Southampton.—The Southampton Dock Company are constructing a dam at the entrance of the middle graving-dock, to enable them to lower the sill and apron 18 inches: the grounding blocks being also lowered, will give a greater depth of water inside.

Ashton-under-Lyne.—The ceremony of laying the foundation-stone of the Odd Fellows' Hall about to be erected in Stamford-street, Ashton-under-Lyne, took place on Saturday before last. It is estimated that the building will cost 3,500*l.* Besides the usual committee and other rooms for business purposes, space is to be assigned for library, reading, and conversation rooms, and the society will confer an important benefit on the town by erecting baths of the usual description, including a spacious plunge bath, which are to be available to the public at a small charge.

Preston.—There has just been completed at the works of Messrs. John Hawkins and Sons, cotton spinners, the highest chimney in Preston. Its height from the foundation to the top of the stone cap, is 258 feet; width at foundation 34 feet; width at ground line, 26 feet 6 inches; width of brickwork at top, outside, 7½ feet; inside, 5 feet 2 inches; extreme width of stone cap, 12 feet, and projection 2 feet 2 inches. The weight of the stone cap is 31 tons. The number of bricks used in the erection was 440,000.

Rotherham.—The engines at the new water-works have been set a-going, and water for the first time introduced into the new mains and works. The works of drainage are also now on the point of completion. The water-works pumping station at the river Don consists of a covered reservoir for 200,000 gallons; two condensing steam engines, with pumps and four boilers, to supply the motive power; engine and boiler house, &c. Two service reservoirs have been made, one at Boston Castle, nearly 300 feet above the lowest part of the town, and the other at the highest part of the village of Kimberworth. The whole district to be supplied lies between the pumping station and the two reservoirs; and the mode of supply will be to raise the water at the pumping station to the level of the reservoirs, and from this level send it through the district by means of cast-iron street mains, already laid. The surplus will pass into the service reservoirs as a store, whence it will return for the supply of the town during the night, on Sundays, and at other times when the engines are not at work, so that the supply will be permanent. The Boston reservoir will contain 600,000 gallons, being a supply for a day and a half at the rate of twenty gallons per head per diem, for a population of 20,000,—a number which much exceeds the present population of Rotherham and Masbro'; and the Kimberworth reservoir will contain two days' supply for that village.

Rossendale.—The reservoir at Higher Stack, nearly a mile from Bacup, on the Rochdale-road, is now nearly completed. Its dimensions are—length, 453 feet; breadth, 330 feet; depth, 25 feet. It is calculated to contain nearly eight hundred millions of cubic feet. Its embankments are 150 feet broad at the bottom, narrowing to 14 feet at top. An auxiliary reservoir is formed on the other side of the valley, draining Stubby Lee Moss and Lee Wood. The waters are conducted through an iron aqueduct, 18 inches in diameter, to the principal one.

CHURCH-BUILDING NEWS.

Oakengates.—The first stone of a new Methodist Reform Chapel was laid there on 30th ult. The building, which will be plain and rather small, after a design by Mr. Davies, is to be raised by Mr. J. Millington, of Ketley, at a cost, we believe, of 260*l.* The work is to be superintended by Mr. J. Peplow, of Oakengates.

Boston.—The cemetery at Boston, in Lincolnshire, has been consecrated. The cemetery contains about twelve acres of land. The buildings consist of two chapels and a lodge. The chapels, which are 200 feet apart, are in the late Decorated style: the walls are built of white bricks, and the open parapets, pinnacles, spire, window, and other dressings of Ancaster stone. Each chapel has a tower and spire, 70 feet high. The label terminations, and the corbels and bosses of ceiling were carved by Jackson, of York. The cost of the chapels is about 600*l.* each. The lodge contains a board or waiting room, two living and three bed rooms, and is built of red bricks, with stone dressings. The buildings were erected from the designs of Mr. Pritchett. Messrs. Baker and Sons, of London (late of Sleaford), were the contractors.

Chelmsford.—A site for a Church of England Cemetery for the town of Chelmsford, has been selected on the Broomfield-road, and about 1,000*l.* have already been subscribed for the purpose, the list being headed with 200*l.* by the rector. It is not intended to erect a chapel for the present.

Romsey.—The first stone of the new vicarage house was to be laid on Monday or Tuesday last, by Lady Palmerston.

Brighton.—After a lapse of two years, says the *Brighton Herald*, a monument has been erected to the memory of the Rev. F. W. Robertson, over his grave, in the Brighton Extra-Mural Cemetery. The expense of this work (about 180*l.*) has been defrayed out of a public subscription. The stone-work of the monument is very simple, being composed of four large upright slabs of Anston stone, surmounted by a larger block of same material,—in height, about 8 or 9 feet. The first impression it produces is one of disappointment, suggestive of the want of some crowning object. There are two electrotype medallions inserted in the stone, descriptive of phases in Mr. Robertson's public career.

Newton-le-Willows. — On Sunday in week before last, St. Peter's Church, Newton-le-Willows, was re-opened for divine service, after undergoing various repairs and decorations. It has been reseated throughout; new windows of cathedral glass have been inserted; and an east window of stained-glass has been given by the Rev. Peter Legh, the incumbent. It is expected that two memorial windows will also be contributed.

Headcorn.—The restoration of Headcorn Church, under Mr. Joseph Clarke, has been completed, and the church re-opened. An entire new roof has been placed over the south chancel, and covered with lead; it is divided into bays, and panelled with moulded principals and cross timbers; the roof over the south chancel has been taken off, and restored. The tower arch is thrown into the church by the ugly gallery being removed. The chancel roof is new, and boarded in oak under, and divided into diagonal panels by moulded ribs. The square pews which filled up the chancel, are removed, and oak stall seats substituted. The south aisle and a part of the nave have been reseated with open benches in pitch pine. Mr. W. Giles, of Ashford, was the builder.

Kingston.—The parish vestry of Kingston, says the *Taunton Courier*, having resolved to thoroughly repair and restore the church, and to raise the necessary funds by a church-rate, the execution of the work has been entrusted to Mr. R. White, of Taunton, surveyor, who, we understand, will commence operations immediately.

FRANCE.

WE learn from the French newspapers that the new building just finished on the Boulevard Mazas, near the Barrière du Trône, intended by the Empress for an educational establishment, has just received the following inscription over its principal entrance—"Maison d'Education pour les Jeunes Ouvrières, fondée en 1855 par Sa Majesté l'Impératrice Eugénie."——Twenty-seven out of the sixty statues which are to ornament the terraces of the new Louvre have already been placed in the positions which they are to occupy. ——The first stone of the Musée Napoléon, at Amiens, has been laid.——It is said that the cost of the lighting of Versailles during the splendid *fête* given to her Majesty was 6,520*l.* The ball given at the Hôtel de Ville cost 12,000*l.*——At a recent meeting of the Academy of Sciences, M. Dumas presented a work offered by the author. M. Le Play, head engineer in the mining department, and commissioner-general for the Universal Exhibition, the title being "Researches concerning the Labour, and Domestic and Moral Condition of the Labouring Classes in Europe." More than 300 complete statements of the situation of labouring families, selected in countries beginning at Cadiz, and including Siberia, thus embracing every situation in Europe, have been collected and minutely investigated by M. Le Play.

COMPETITIONS.

The Birmingham and Midland Institute.—The committee have selected the design of Mr. E. M. Barry. It is in the modern Italian style. The local journal says, a rusticated base on the ground-floor supports a façade of slender pilasters, crowned by an entablature and cornice, the windows being decorated, but there is an almost entire absence of shadow, arising no doubt in a great measure from the form and confined nature of the ground, and this will be observable in a greater or less degree in all the designs with one or two exceptions, and is moreover an evil we must be content to bear when we consider the price of land in the very heart of such a town as Birmingham. The centre of the main front and the sides of the wings in Paradise-street, rise a story higher than the rest, and in the north and south elevations form imposing entrances to the Industrial Department and the Department of Ornamental Art, the latter fronting to Paradise-street. At this end is also placed the Theatre, which is of a quadrantal form, following the sweep of the ground. In the lobby of the entrance to this theatre is a staircase leading to the Department of Ornamental Art. The grand entrance to the General Department is in the centre of the façade, parallel to the side of the Town-hall, and consists of a portico of five arches, leading into a loggia and grand staircase, with corridors traversing the entire length of this portion of the building. Right and left on the ground-floor are arranged a museum, a repository for mining records, a meeting-room, and committee-room; on the first-floor, a library, news-room, and museums. The Industrial Department is entered in Edmund-street, and in that portion of the plan of the building, when completed, is a coffee and club-room of a semi-circular form, the ceiling supported by Corinthian columns. The various class-rooms are situated on the upper floors. The communication throughout appears to be well kept, with a trifling exception, which an unimportant transposition of a few rooms would easily remedy.

The Milton Club.—A limited number of invited architects are now making designs in competition for a hall for the Milton Club, Ludgate-hill. Each competitor will be paid a certain sum for office expenses.

Gratuitous Plans.—Some of your correspondents seem to be indignant with a committee, who recently advertised for gratuitous plans for a chapel, and one of them considers that this may probably mark the commencement of a new era in competitions; it is, however, only a vigorous carrying out of the old system. Of course it would be impossible to say whether so economical an advertisement will be responded to; but if a guinea had only been held out as a prize, the advertisers would have secured more plans than they could ever have done justice to. It seems, therefore, under these circumstances, unfair to blame committees, who, after all, only discharge faithfully the trust committed to them; for if they employed an architect, and paid him a commission, they might fairly be asked why so much money was paid for a single set of plans, when a mere fraction of the amount judiciously expended might have produced twenty. The cause is, as I have before attempted to point out in your journal, that there are three times as many architects in the kingdom as can live by their profession. Architects as a rule are recruited, unlike some of the other professions, from among the humbler walks of life; their slender patrimony, if they possess one, is often unable to support them

during long intervals that elapse between their employment; and hence it is, that the smallest premium always brings such a deluge of designs. If committees, therefore, can procure plans, and those often good ones, so cheaply, they will certainly continue to do so, and all indignation-meetings, or protests, and all the unkind things that can be said regarding them, will be so much lost labour; for to all this, their unanswerable reply would still be, if they chose to trouble themselves about the matter, that while they could obtain designs in such overwhelming numbers to choose out of, and that so very cheaply, they would act foolishly to pay a much larger sum of money for a single set of drawings. It might be well, therefore, if some of your correspondents who seems so anxious to remedy matters, would turn their attention to the real source of the evil, and for the present expend no more time in philippics against committees.—A. R.

WASH FOR OUTSIDE WALLS.

YOUR correspondent, "T. W." in a previous number, inquires for a cheap and durable substitute for paint on outside stucco.

Such an article is extensively used in this part of Devonshire, and is prepared in the following manner:—To a half bushel of stone lime put one gallon of raw linseed oil, the lime to be first wetted with sufficient water to cover it completely over, and the oil to be added when in its boiling state. It can be tinted according to taste with any common colours. The above ingredients are sufficient to colour at least 500 yards. Care should be taken to clean the surface well before using the colour. If two coats of the colour be given to the wall, it adds much to its beauty and durability.

The above, if mixed and laid on with care, will stand the weather, and keep its appearance equal to paint for three or four years. W. A. G.

I will solve the secret (but not with soap) of mixing oil with water-colour, thereby rendering it much more durable and impervious to wet: it is by mixing fresh quicklime with hot water gradually, till it becomes the consistence of thick cream; if boiled linseed oil be now added while it is hot, and well stirred, it will become perfectly amalgamated; sufficient water is now to be added, to make it a proper consistence, and it may be coloured with a little umber, yellow ochre, and Venetian red.

For rough work, gas tar may be substituted for boiled oil, the smell of which will be gone in a few days. This does not require any colouring.

White lead or paint is expensive and useless.

CHEMICUS.

HUTS FOR THE CRIMEA.

MESSRS. WILLIAM CUBITT AND CO. of the Gray's-inn-road, and other large firms, have been for some weeks past employed in preparing portable huts for the Crimea, in accordance with the plans of the Board of Ordnance, by which the huts being built in sections or compartments can be packed in a comparatively small space, and can be easily put together by simple contrivances. A considerable portion of them are finished and shipped, and the rest are advancing to completion with a rapidity which must astonish all who are unacquainted with the appliances of a large building establishment.

There are different kinds of huts to be sent out, some of which are covered with a single thickness of boarding, and the others with a double thickness.

The single boarded huts are 32 feet by 16 feet, and 76 feet by 16 feet, in the clear, and will accommodate respectively twenty-two and fifty men. The sides are prepared in panels, 6 feet high by 4 feet wide, composed of rough framing, covered with weatherboarding. These are secured together by means of screw bolts and nuts. The sills at their junctions lie in cast-iron shoes. A certain number of these side panels are prepared with small frames, in which sashes are hung on centres, by which light is admitted to the huts. Each end is formed of five compartments, the centre one being a door-frame and door, with hinges and lock; those on either hand being panels of framing, and weatherboarding bolted together; above these, bolted to the head-pieces, are two spandril-shaped frames, to form gables, covered with weatherboarding, and bolted together. In each spandril is a small frame, filled with louvres for ventilation. The roof is formed of similar panels, 9 feet 6 inches long by 4 feet wide, the tops bolted together, and the feet bolted to head of sides; the joint at top is made weather-tight by a saddle-back ridge, which runs the whole length of hut. The side pieces of roof panels or rafters are bolted together, and at each edge a fillet is nailed, standing up above the boarding,—two fillets being thus close together; at the joint are covered by a solid grooved capping to keep out the wet. Ventilation is obtained on the roof by cutting square holes at the top of corresponding panels in the boarding only, and nailing fillets on the raking sides of the holes: pieces of zinc are then nailed over the openings, leaving a narrow orifice at bottom for ventilation. The roof is tied together by collars, one to each panel, bolted to rafters. The flooring of these huts is prepared in panels, 5 feet 4 inches by 4 feet, formed of two thicknesses of $\frac{3}{4}$ in. boarding, nailed together. These panels are notched where necessary, to fit the upright timbers of hut, and are nailed down to sill of sides and ends and to two sleepers, which divide the floor into three longitudinal compartments or bays of 5 feet 4 inches each.

The interior of these huts will be covered with sail-cloth hung to hooks.

Another description of hut is 76 feet long by 16 feet wide, and is to accommodate fifty men. The sides are divided into nineteen bays, 4 feet wide each, by posts, 4 in. by 3 in. those at angles being 4 in. by 4 in. tenoned at each end, grooved for panels. A head and sill run the whole length of hut, the former mortised to receive posts, the latter mortised for posts and grooved for panels.

The panels are formed of weather-boarding, with an inner lining of $\frac{3}{4}$ upright boarding nailed in. The inner lining projects beyond the weather-boarding all round, thus forming a tongue which fits into the groove in posts and head, and the weather-boarding fits exactly the space between posts, &c. Five of the bays in each side have sashes and frames. In these the panels fit in under sill of sash-frame. The ends are divided into five bays by similar posts, with head and sill, the centre bay having a door and frame, two bays on either hand being filled with panels similar to those at side. The gables are in all respects similar to those of huts Nos. 1 and 2, and are bolted to head-pieces of end-framing.

The roof is formed of skeleton frames composed of rafters, head-sill, and purlins, each pair of corresponding frames being tied together by a collar bolted to the rafters. The sills of these frames are bolted to head-piece of side-framing, and the tops are secured together by hook-and-eye fastenings. On each of these roof-frames are laid two panels formed of weather-boarding lined with $\frac{3}{4}$ boarding, and having sheets of felt between the thicknesses. The horizontal joints between the two panels are made water-tight by a strip of sheet-iron lying under the weather-boarding of upper panel, and overlapping that of lower one. The panels are secured to purlins of roof-framing by thumb-screws and plates, the raking joints of roof panels and ridge are made weather-tight in the same manner as to the other huts. Ventilation will also be obtained to these huts as to Nos. 1 and 2. The flooring is exactly similar to that described for Nos. 1 and 2.

A fourth description of hut is intended to accommodate eight officers. It is constructed similarly in all respects to No. 3, and differs only in size and arrangement. It is 36 feet by 20 feet in the clear, and is divided into two main compartments by a transverse central passage having a door at each end. The partitions forming this passage are of grooved posts, head, and sill, as before described, filled in with 1 in. ploughed and tongued boarding, ledged. Each of the main compartments is subdivided into two chambers, suited for two officers each, and separated by partitions similar to those forming the passage. Each chamber has a door communicating with the passage and a sash as described to the other huts. The ventilation to the huts is similar to that already described.

THE METROPOLITAN DRAINAGE QUESTION.

HOW TO GET RID OF THE THAMES.

A TRACT, titled "The Improvement of the Drainage into and the Cleansing the Waters of the Thames," by Mr. George Burge, the contractor, has been printed, in which several modes of settling the Thames question are proposed. The first of these, so far as we can understand its rather curt phraseology, consists in an improvement of the drainage into the Thames by the purchase of all property below, or level with, high-water mark (as in Bermondsey, Lambeth, and Vauxhall, we presume), and filling it "up to a little above high water," so that continuous drainage in place of tidal would be secured by draining to high water mark only and not to low. "Millions of money," Mr. Burge remarks, would thus be saved. Connected with this scheme there are reservoirs and filter-beds, sewers to Barking-creek, &c., but nothing further so original as the filling up of the Surrey side. The next scheme Mr. Burge calls "the best and cheapest method of introducing railways into the City and suburbs of London," and it seems to consist in simply building a quay wall across the Thames, "from Queenhithe, Thames-street, to the point opposite on the Surrey side, and so to stop the water back on the east side," and "then to fill up the river from thence to Hammersmith, making sufficient space for all the various railways to run over this embankment." In thus virtually saying to the river on one side, and to the sea on the other, "Thus far shalt thou come, and no farther," Mr. Burge appears to have forgotten to state what he means to do with the river itself, unless it be that in incidentally remarking that it "can be made available for the supply of London and the vicinity," he considers that he has thus satisfactorily disposed of it. Our only fear is, that the "supply" would be *rather* superabundant, and scarcely satisfactory; but even though the Thames were really to be disposed of bodily and wholly, through metropolitan domestic half-inch pipes, the metropolitan population, large as it is, can scarcely be conceived to be capable of swallowing it all up in culinary purposes; and still, therefore, we should have to ask Mr. Burge what *are* we to do with it when we *have* done with it? The acute lad who is said to have stopped up the head spring of the river with his finger, and boasted that now he had astonished the Cockneys by drying up their river, seems to us to have suggested a better way of getting rid of the Thames than this. But seriously, Mr. Burge, a matter-of-fact and shrewd contractor, must have some intended mode of disposing of the river, whether by a deviation of its course into some new channel or otherwise; and certainly it is a very strange oversight to say nothing at all on a point so vital to his own vast scheme as this is.

Miscellanea.

WHERE ARE THE BUILDERS? — The *Harrow Gazette* says,—"The demand for houses at Harrow has never been so great as during the last year, and particularly the last two or three months. The class of houses generally required are those at rents varying from 40*l.* to 60*l.* Suitable building land can now be had, and it is a matter of surprise to us that parties do not come forward to build on a large scale, as we feel confident that the speculation would answer, and return a large rate of interest. Harrow is well drained, supplied with an abundance of pure spring water, and will shortly be lighted with gas. The London and North-Western Railway Company have liberally offered to the occupiers of all new houses erected here, of the annual value of 50*l.* and upwards, a free first-class pass to and from London for eleven years. Harrow for healthfulness stands second to no place in the kingdom, and its Educational Establishment is equally as pre-eminent."

THE NEW ACT TO PROVIDE DWELLINGS FOR THE LABOURING CLASSES.—The Act for facilitating the erection of dwellings for the labouring classes was passed on the day of prorogation. The Act may be applied to the United Kingdom, except Scotland. The preamble states that it is expedient that facilities should be afforded for the erection of "healthful and commodious dwellings;" and with this view a company may be formed, by subscribing articles of association in the manner described. Every company incorporated under the Act is to be established for the purpose of providing dwellings for the labouring classes, with or without private gardens, or with or without common gardens, or places of common recreation for the use of the inmates of such dwellings, "and for no other purpose whatever." The regulations as to drainage, ventilation, and water, are set forth, to be approved of by the General Board of Health, whose officer is at all reasonable times to inspect the dwellings erected under the Act. Among the provisions is one authorising the imposition of fines if the dwellings are not kept in a proper condition.

FIRE AT MESSRS. BAKER'S.—Very extensive premises and stock at New Stangate-wharf, Lambeth, belonging to Messrs. George Baker and Son, builders, were unfortunately destroyed by fire on Tuesday morning last.

SOCIETY OF ANTIQUARIES, NEWCASTLE-UPON-TYNE.—The September meeting of this society was held on Wednesday before last, at the Castle. Dr. Charlton reported, on the part of the sub-committee appointed to confer with the corporation as to the Black Gate, that it seemed to be the fixed intention of that body to build up and conceal this relic of antiquity, almost as much as before. The Duke of Northumberland had viewed the Black Gate as it now stood, and was very anxious, for the honour of the town and the sake of archæology, that it should not be again hidden, in building upon the space between it and the railway arches. The Chairman regretted to hear this report; and such was the general feeling of the meeting. Dr. Charlton submitted plans, prepared by Mr. Dobson, of the proposed room over the hall of the Castle, to serve as a Museum of Antiquities. It was believed, he said, by many of the members, that this would simply be a restoration of a room originally existing. The estimated cost was 134*l.*

THE LION-HUNTER.—The views with which Mr. Gordon Cumming illustrates his interesting and well-delivered lecture in Piccadilly, descriptive of his achievements, were painted by Mr. Harrison Weir, Mr. Haghe, Mr. Leech, and others, and although various in quality, are for the most part life-like and satisfactory. We should particularly mention elephants drinking at night. The exhibition as a whole, including as it does these views, the fine collection formerly in the Chinese Exhibition, at Knightsbridge, a graphic and startling account, some characteristic music, and the very extraordinary man himself, who is just as much at home in the drawing-room as in an African jungle, *tête-à-tête* with his "first lioness," cannot fail to be popular.

A TESTIMONIAL, in the shape of a service of plate, has been presented to Mr. C. J. Thicke, as founder of the British Mutual Loan Classes, by members of the classes. Mr. Hamber, who was in the chair, said the estimation in which the classes were held was proved by the fact of their having exhausted the alphabet in giving a letter to each class, and now, in addition, numbering to fifty, making advances daily to those who require them, in amounts equal to, if not exceeding, 1,000*l.* a week. We can say from personal knowledge that the testimonial was well deserved.

CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.—The ninth annual meeting of this association was commenced at the Town-hall, Llandilo, on Monday, the 27th ultimo; on Earl Cawdor's proposal, Lord Dynevor took the chair, in the unavoidable absence of Mr. West, the president. The Rev. James Allen, general secretary, read the report of the committee, which was regarded as exceedingly satisfactory. The first paper was by Archdeacon Williams, on Carregcennan Castle, and was read by Mr. Banks. The next communication was one from Mr. J. C. Westwood (read by the Rev. H. Longueville Jones), respecting the Inscribed and Sculptured Stones in the county. On Tuesday morning an excursion to Carregcennan, Llygad Llwchur, &c. took place; and in the evening a meeting was held, at which Mr. Babington gave an account of the objects examined in the morning, with his own views on them. The first paper read was by Mr. J. T. D. Llewelyn, on the opening of a cairn at Carngoch, north west of Swansea. Mr. L. Jones read a paper, by Mr. L. Parry, on Tre'r Ceiri, an ancient British fortress in Carnarvonshire; and Mr. T. O. Morgan read one on the Divisions, Ancient and Modern, of the County of Caermarthen. Mr. L. Jones also read a paper on the Armorial Bearings of the Prince of Wales; and Mr. C. C. Babington one on Caercaregyfran, a Cyclopian Fort at the Pass of Llanberis, in Carnarvonshire. On Wednesday an excursion was made to the hills of Gogafou, to Cynwil-Caeo, Dolaucothi, and other places; and in the evening the president and Mr. Bury reviewed the proceedings of the day. Mr. Knight read a paper on Mining and the Gogafou Mines. On Thursday another excursion took place to Golden Grove, the seat of the Earl of Cawdor, and to Llanarthency and other places of interest; and on Friday the party proceeded to Garngoch. In the evening Mr. L. Jones read a paper on Offa's and Wat's Dyke; and Archdeacon Williams one on Garngoch.

THE O'CONNELL MONUMENT IN GLASNEVIN.—A fresh impulse, we hear, has been given to this work, and some of the outstanding subscriptions are at length beginning to come in. Great progress has already been made with the monument. The round tower has been carried to a height of about 100 feet, and its elevation will yet be considerably greater; but the round tower is only a portion of the monument as designed by Dr. Petrie. The expiatory chapel of ancient Irish architecture, and the stone cross of the ancient Irish model, form, it seems, indispensable features of the work; and to erect them the funds of the committee are utterly inadequate.

THE SUSSEX ARCHÆOLOGICAL SOCIETY AT WORTHING.—Last week a quarterly meeting of the Sussex Archæological Society was held at Worthing. The church of Broadwater, a fine Norman church, which is undergoing thorough restoration and repair, chiefly at the expense of Mrs. Thwaites, was the principal object of the archæologists. The choir is undergoing restoration, including a painted east window, sedilia, miserere stalls, &c. The works are being carried out by Mr. Charles Hide, architect, of Worthing. Mr. Hide pointed out to the assembled archæologists the peculiarities of the structure, and explained his *modus operandi* in bringing into their original position the walls of the choir, which had become 18 inches out of the perpendicular. At a meeting held at the Literary Institution at Worthing, for the despatch of business, Mr. Blaauw read an extract from a record, of the time of Edward I. respecting a valuation of goods at Sompting, near Worthing. Mr. Lower read a paper on the family of Miller, of Winkinghurst and Burghill, from materials drawn up in 1723.

CITY BATHS AND WASH-HOUSES.—The petition to the Mayor and Corporation, unanimously adopted by the Guardians of the West London Union, has been printed. The great social problem to be developed, it remarks, is the improvement of the lower orders of society, and the fitting of them to be that basis which shall uphold all above them in security and prosperity. Believing this firmly, it continues, the Guardians of the West London Union conceive that if, by this appeal, they should succeed in stimulating the Corporation of London to the erection of baths and wash-houses for their district, which is almost exclusively populated by the poorer and industrious classes, the richer mostly living out of town, they will be giving a direction to its revenues which will not only do honour to the Corporation, but confer a lasting benefit on the present age, and on distant posterity.

METROPOLITAN COMMISSION OF SEWERS.—At a recent meeting of the Commission, the secretary read letters from the churchwardens of St. Paul's, Covent-garden, and from Mr. S. Hughes, a parishioner, requesting the commissioners to proceed with the works ordered to be executed in Bedford-street, and which had been stopped in consequence of the alarm as to the late outbreak of diarrhœa in Bedford-street. It was resolved that the works be immediately proceeded with. The house-drainage question is now in course of practical settlement under the Sewers (House) Drainage Act. At a late meeting of the commission, it was arranged that the works requisite in Castle-street and Nottingham-court, St. Giles's, belonging to a gentleman named Veal, should be done by the commissioners on estimates, by their surveyor, which were admitted on the part of the proprietor to be very moderate, and which it was agreed that he should pay. In another case in regard to drainage works requisite at No. 2, Short's-gardens, King-street, Longacre, the Court consented to make an order—the first, we believe, of the kind under the new Act of Parliament, for the payment of 66*l.* 11s. 4d. in this manner, namely:—4*l.* 8s. 9d. per annum for ten years, leaving the remainder, or 19*l.* 3s. 10d. to be liquidated after the expiration of the interest of the leaseholder, either by the owner of the property or by a successive holder of the lease.

NASMYTH'S WROUGHT-IRON CANNON.—The *Manchester Guardian* announces the failure of Mr. Nasmyth's monster gun, not on account of the mechanical difficulties which had to be encountered—formidable as they were—but from a most unexpected peculiarity in the material employed, when brought together in so large a mass as was necessary, and which consists in a process analogous to crystallization taking place within its substance during the protracted time of cooling, whereby the fibrous texture, from which it derives its tenacity, is destroyed, and it becomes even less capable than cast iron of resisting the explosion of a heavy charge of gunpowder. The experiment has consequently been abandoned. We are rather surprised at this result,—not that the sustained incandescence of so great a mass of iron should allow its particles to settle into a crystalline and brittle form, but that such should have been the method adopted, and that the experiment should have been abandoned on its failure. We had an idea that so immense a mass of ordnance as this was designed to be, would have been as it were built up, by help of the steam hammer, in twisted, tough, and well-worked layers, all welded together one after another, so that no great mass would have ever been at once in a state of long-continued incandescence. In this way it seems obvious that almost any amount of resistant power might be obtained.

GENERATING STEAM BY PEAT.—A series of experiments have of late been conducted at the engineering works of Messrs. Gwynne, Essex Wharf, Strand, to ascertain the relative power of peat in comparison with coke, when used in the generation of steam. The experiments were considered favourable to the use of peat, and one circumstance, it is said, was especially noticeable—the total absence of smoke, so perfect was the process of combustion, which would seem to indicate peat to be the fuel for general use where smoke-consuming furnaces have failed in operation, or where, owing to existing sanitary regulations, the use of coal is inexpedient and impracticable.

THE FIRST TIMEKEEPER MADE OUT OF CLAY.—M. Raby writes, from Paris, that this great industrial achievement was deposited at the Exhibition on August 22, and that it was inspected by the Queen and Prince Albert. All the works, plates, cogs, and wheels, are made of aluminium; and M. Raby believes it is much better for purposes of this kind than the other metals generally employed. It is much lighter, does not require so much power to conduct the wheels, and, therefore, with a heavy balance, will obtain a better result of regularity. It is very hard and smooth when hammered, and the friction will be reduced to almost nothing.

MR. GOURLAY, of Edinburgh, whose name is not unknown to our readers, offers six prizes, of twenty guineas each, for the best designs for carrying into effect certain proposed improvements. The designs requested are:—a cast-iron bridge from the Carlton Convening Rooms to St. James's-square; a level road from Prince's-street to the Grassmarket, tunnelled through the High-street; a level bridge from Prince's-street to St. Giles's Church, with an opening into Bank-street; a quadrant from John Knox's Church, extending along the north slope of the High-street to the blind arches of the North-bridge; an alteration of Castle-terrace, involving the demolition of several buildings; a bridge from the Carlton-hill to Ireland's Woodyard, where Mr. Gourlay proposes to place Trinity College Church.

ELECTRO-TELEGRAPHIC PROGRESS.—A project has been submitted by Signor Bonelli, of Turin, to the Governor of Malta, and by him to the British Government, to execute in two months, at the expense of 10,000*l.* the junction of Malta with Cagliari, in Sardinia, by one of the telegraph cables of his own construction. Lord Panmure has requested to be informed, without loss of time, what portion of the estimated amount would be contributed by the island treasury. Signor Bonelli has also proposed a more extended plan of operations, by continuing the chain to Candia, and from thence two branch lines,—the one to the Dardanelles, the other to Alexandria, in Egypt. This latter course would, it is estimated, require 60,000*l.* and six months' time.

TENDERS

For additions and alterations to be performed at Nos. 15, 16, and 17, Cheapside, for Messrs. Welch and Margetson. Messrs. Tillott and Chamberlain, architects. The quantities supplied:—

Myers	£5,300 0 0
Holland and Co..	5,148 0 0
Piper and Son	4,840 0 0
Brown and Co.	4,594 0 0
Haynes and Eyre	4,590 0 0
Brass and Sons	4,536 0 0
Rider	4,240 0 0
Lawrence and Sons(accepted) ...	4,185 0 0

For building Offices and Sanitary Show-rooms, for Mr George Jennings, on his Wharf, Holland-street, Blackfriars:—

Friend	£1,845 0 0
Marsland	1,831 0 0
Rider	1,810 0 0
Lawrence and Sons	1,794 0 0
Taylor and Co.	1,775 0 0

For alterations to Seven Houses at Clapham-road, for Mr. W. H. Smith. Mr. Benham, architect. Quantities by Mr. Carter:—

I'Anson	£1,986 0 0
Fox	1,900 0 0
Brown	1,867 0 0
Curtis	1,826 0 0
Wilson	1,771 0 0

TO CORRESPONDENTS.

"S. A."—"M. S."—"J. D."—"No Slavie."—"Slag."—"G. J."—"Lieut.-col. H."—"B. B." "G. P." (thanks).—"S. N." (through the Government Military Schools, or conduct in the ranks).—"C. A. W."—"J. W."—"B. B."—"E. H. D."—"Old Subscriber."—"J. S." (apply to a patent agent).—"T. H."—"S. H."—"J. B." "J. J. K."—"C. B."—"E."—"R. J. H."—"W. G. J."—"S. B." "M. G. D." (thanks).

"*Books and Addresses.*"—We are forced to decline pointing out books or finding addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and not to the Publisher.

ADVERTISEMENTS.

BOROUGH of GATESHEAD.—To ENGINEERS and SURVEYORS.—Notice is hereby given that the Office of SURVEYOR and INSPECTOR of NUISANCES to the Corporation of Gateshead will become VACANT on the 14th NOVEMBER next. Candidates for the appointment may forward testimonials of qualification and competency, addressed to the Town Clerk, Townhall, Gateshead, before MONDAY, the 29th day of OCTOBER next, on which day the Committee appointed by the Corporation, will meet at TWO o'clock in the afternoon, to receive and examine applications and testimonials of candidates. The duties of such Surveyor will comprise the usual business of the Corporation, including that of the Local Board of Health and the Gateshead Quay Commission. A candidate must be familiar with the practice of engineering in connection with works of water supply, gas, drainage, sewerage, and surface cleansing—competent to conduct surveys, prepare plans, drawings, and estimates of works of every description, and able to superintend the execution thereof, test the materials, and see to the fulfilment of the conditions of the contract for executing such works. The whole time of the Surveyor is to be devoted to the duties assigned to him, and he is to be restricted from undertaking any other employment. Salary, 210*l.* per annum.—Candidates are to state their age in their applications, but are not required to attend personally before the committee, unless specially summoned. The successful candidate is required to give security for the faithful discharge of his duties by the bond of himself and two sureties in 500*l.*—By order,

G. J. KENMIR, Town Clerk.

Town-hall, Gateshead, August 29, 1855.

GLASS TRADE.—WANTED, a Person who has experience in the Trade, as TRAVELLER, in Town, and elsewhere, as occasion may require.—Address, by letter, in the first instance stating qualifications, reference, &c. to A. B. C. Office of "The Builder."